

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/21/2010 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Information Disclosure Statement

3. The information disclosure statement filed 1/18/2011 complies with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. It has been placed in the application file, and the information referred to therein has been considered as to the merits.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Based upon consideration of all of the relevant factors with respect to the claim as a whole, claim 1 is held to claim an abstract idea, and is therefore rejected as

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ineligible subject matter under 35 U.S.C. § 101. The rationale for this finding is explained below: the claims do not require a machine and performs an insufficient recitation of a transformation (transformation involves only a change in position of the image data, rotation). Furthermore, the claims recite mental activity (forming a judgment, observation, evaluation, or opinion).

6. Dependent claims 2 through 8 and 10 when analyzed as a whole are held to be ineligible subject matter and are rejected under 35 U.S.C. § 101 because the additional recited limitation(s) fail(s) to establish that the claim is not directed to an abstract idea, as detailed below: the claims do not require a machine and do not perform a sufficient transformation of the image data. Lastly, the claims recite mental activity and human decision making (calculating visual distance after rotating the images including subimages).

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

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only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Wang et al. ("Image Disorientation Auto-Recovery," "Wang").

1) Regarding Claim 1, Wang teaches a method for detecting the orientation of images in a set of captured images representing a similar scene, all the images in said set of captured images containing at least one similar object, wherein the method comprises the steps of: choosing a reference image from the set of captured images, the reference image having an orientation that is known a priori (Page 14, Lines 1-17: Based on the acquired sets of images, reference images are selected, where the reference images indicate the correct orientation); and

detecting orientation of at least one other image of said set of captured images representing the similar scene as a function of the orientation of said reference image (Page 12, Lines 1-29: The orientation of the target image is determined, based on the extracted features of each reference image, thus a function of the orientation of the reference image (Page 13, Outline of the algorithm, 1. & 2.)).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2 through 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Chiba et al. (U.S. Pat. No.: 6,744,537, "Chiba").

1) Regarding Claim 2, while Wang teaches the limitations of claim 1, he fails to explicitly teach calculating a visual distance between the reference image and the at least one other image.

However, in the same field of image recognition and correction, Chiba teaches calculating a visual distance between the reference image and the at least one other image (Col. 80, Lines 24-26: computing for distances between an input character and candidate characters in the recognition directory is executed).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to calculate the visual distance between the reference and target images of Wang using the teachings of Chiba of determining a distance between two images (using extracted features of the images being compared), prior to determining the orientation of the target image. The determination of obviousness is predicated upon the following findings: one skilled in the art would have been motivated to modify Wang in this manner because calculating a difference in distance between two images allows recognizing the scene and correctly orienting it quickly using a small number of features (distance). Furthermore, the prior art collectively includes each element claimed (though not all in the same reference), and one of ordinary skill in the art could have combined the elements in the manner explained above using known engineering design, interface and/or programming techniques, without changing a "fundamental" operating principle of Wang, while the teaching of Chiba continues to perform the same function as

originally taught prior to being combined, in order to produce the repeatable and predictable result of determining and correcting orientations of images. It is for at least the aforementioned reasons that the examiner has reached a conclusion of obviousness with respect to the claim in question.

2) Regarding Claim 3, the combination of Wang and Chiba teaches the limitations of claim 2, where Chiba further teaches comprising a step of calculating the visual distance between the at least one other image and the reference image for different orientations of the reference image (Col. 80, Lines 24-26: computing for distances between an input character and candidate characters in the recognition directory is executed), wherein the different orientations include the at least one other image and the reference image being provided in a first orientation, the reference image having undergone a rotation of 90 degrees (Col. 80, Lines 31-45: The image direction correcting section checks the rotation angle or mirroring of an image having the highest recognition certainty or highest probability of accurate recognition among the images BG1 to image BG8 shown in Figure 50. The image with the highest certainty or probability (the closest distance between the input and candidate characters as outlined in claim 2 above is given a higher probability/certainty) is selected as the most correctly orientated image. Figure 50, BG 3 is rotated 90 degrees), 180 degrees (Figure 50, BG 8 is rotated 180 degrees), or 270 degrees with respect to the first orientation (Figure 50, BG 2 is rotated 270 degrees (-90 or counterclockwise)).

3) Regarding Claim 4, the combination of Wang and Chiba teaches the limitations of claim 3, where Chiba further teaches comprising a step of determining a subimage in the reference image and a subimage in the at least one other image, the calculation of the visual distance between the at least one other image and the

reference image being performed on the respective subimages (Figure 48: Original image is shown as a full page containing an subimage, BG 5. The rotation and distance is performed on the subimages as outlined in analysis of Claims 2 & 3 above (Also seen in Figure 50)).

4) Regarding Claim 5, the combination of Wang and Chiba teaches the limitations of claim 4, where Chiba further teaches wherein said subimages have the same size (Figures 48 & 50: Figures or original and subimage are same in relative size. Figure 50, the subimages are same as well).

5) Regarding Claim 6, the combination of Wang and Chiba teaches the limitations of claim 4, where Chiba further teaches wherein said subimages are centered with respect to the images in which they are positioned (Figure 48: The subimage "F" in BG 1 is centered with respect to the image in which it is positioned).

6) Regarding Claim 7, the combination of Wang and Chiba teaches the limitations of claim 4, where Chiba further teaches wherein said subimages are positioned in such a way that the visual distance between said subimages are minimal (Figure 47: Subimages are positioned as to minimize the distances between set of subimages).

7) Regarding Claim 8, while Wang teaches the limitations of claim 1, he fails to explicitly teach comprising a step of selecting the reference image as a function of the distance between the reference image and a target image.

However, in the same field of image recognition and correction, Chiba teaches comprising a step of selecting the reference image as a function of the distance between the reference image and a target image (Col. 80, Lines 28-30: A candidate character (reference image) having the minimum distance is recognized as a final candidate (target image) for the inputted character).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to select the images of Wang as the reference image as a function of the distance between the reference and target images as taught by Chiba, followed by determining the orientation which is taught by Wang. The determination of obviousness is predicated upon the following findings: one skilled in the art would have been motivated to modify Wang in this manner because selecting a reference image which closely resembles the target image based on the distance between the two images ensures that the process is not slowed down by comparing all reference characters to an image and using the distance uses a small number of features to determine orientation. Furthermore, the prior art collectively includes each element claimed (though not all in the same reference), and one of ordinary skill in the art could have combined the elements in the manner explained above using known engineering design, interface and/or programming techniques, without changing a “fundamental” operating principle of Wang, while the teaching of Chiba continues to perform the same function as originally taught prior to being combined, in order to produce the repeatable and predictable result of [5]. It is for at least the aforementioned reasons that the examiner has reached a conclusion of obviousness with respect to the claim in question.

8) Regarding Claim 10, the combination of Wang and Chiba teaches the limitations of claim 4, where Chiba further teaches wherein said subimages have same width to height ratio (Figure 50: The subimages have the same width to height ratio).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nirav G. Patel whose telephone number is (571)270-5812. The examiner can normally be reached on Monday - Friday 8 am - 5 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nirav G. Patel/
Examiner, Art Unit 2624

/Brian P. Werner/
Primary Examiner, Art Unit 2624